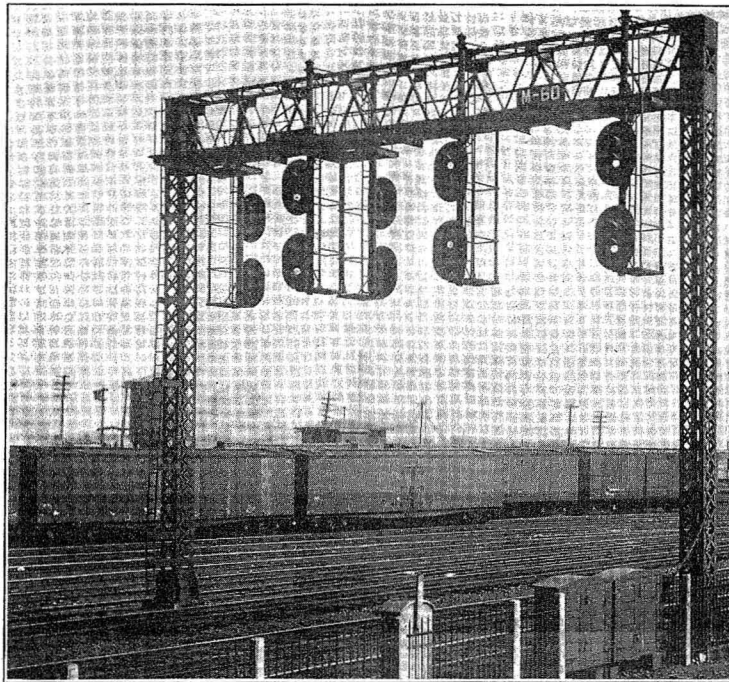
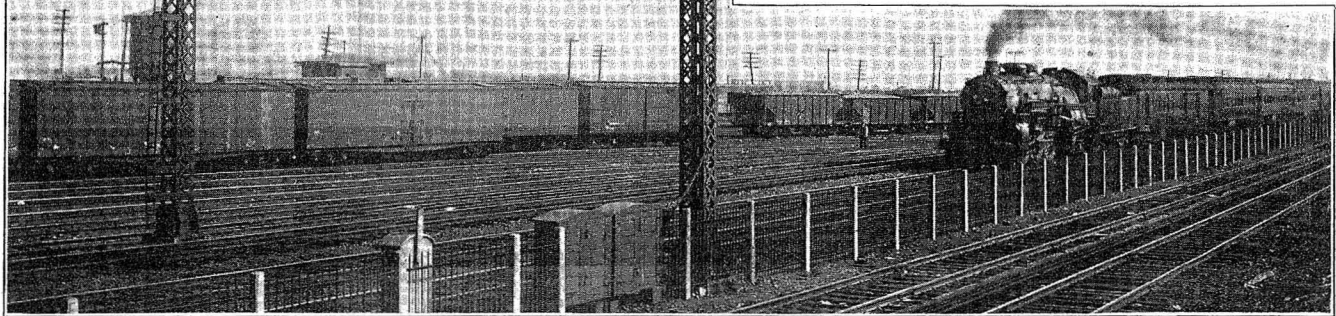


Signaling Meadows Line of D.L.&W.



Heavy Traffic Handled by Means of Modern Interlockings and Signaling With a New Fourth Indication



Looking East from Harrison Towards Kearny Junction

THE Delaware, Lackawanna & Western delivers over 60,000 people every week day to its Hoboken terminal. These people are, to a large extent, commuters who take the Lackawanna ferries or the Hudson & Manhattan tubes from Hoboken to various terminals in New York City. In the evening, the commuters are returned to their homes throughout a considerable section of northern New Jersey. Two hundred fifty scheduled trains are run on week days and 108 on Sundays. To handle traffic of this nature safely and without delays forms one of the greatest problems in modern railway operation.

Track Facilities and Interlockers

The Hoboken terminal has 16 platform tracks. Two large electro-pneumatic interlocking plants control train movement on the six through tracks, converging to four tracks through the Bergen tunnel. Three of the last mentioned tracks are signaled for traffic in both directions, thus allowing four tracks to be utilized for traffic in a single direction during portions of the day when this is advantageous.

An electro-pneumatic interlocking at West End controls train movements to and from Bergen tunnel and the junction of the two main lines—one four track westward towards Boonton, and one three-track leading southwest to Morristown, Montclair and Gladstone. Practically 80 per cent of the passenger traffic is handled over the latter line, while most of the freight trains are sent over the former, largely because of extensive yards and other facilities at Secaucus.

The signaling which has been installed recently extends from West End interlocking to Newark interlocking—a distance of 5.9 mi. The accompanying track and signal plan, Fig. 1, indicates, to some extent, the nature of this work. Electro-pneumatic interlockings were installed in place of the older mechanical plants at Hackensack drawbridge, Kearny Junction, Harrison and New-

ark. A mechanical interlocking plant which was in service at Passaic drawbridge was reduced in size so that it now handles only a freight lead occupying the lower deck of the bridge, while the units governing train movement over the double track on the upper deck are controlled and operated from the Newark interlocking machine.

The four tracks from the tunnel through West End interlocking converge to three and then to two, which pass over Hackensack drawbridge. Three tracks are provided from this drawbridge through Kearny Junction and Harrison interlockings to within about 1,600 ft. of the Passaic drawbridge. The double track over this bridge joins to three tracks at the west end, this junction being handled by the Newark interlocking. Tracks 1 and 3 are signaled for traffic in both directions; track 2 has signals for eastward trains only. The changes in number of tracks and reversals of normal direction of traffic necessitate the interlocking of switches and signals throughout this section.

Through passenger and suburban express trains pass through the newly signaled zone without stopping, and usually at speeds of from 30 to 50 mi. an hr. Some of the local suburban trains stop at Harrison station, between Harrison tower and the Passaic river. No other regular stops are made. Freight trains are moved into and out of Harrison yard, and freight cars are delivered to industries west of Hackensack draw, near Harrison, and in Newark. Movements are also made from the main tracks at Harrison to the lower deck of Passaic drawbridge. Interchange tracks connect with the Pennsylvania at Kearny Junction.

A record taken on an ordinary week day showed 228 trains in 24 hr., or one train for each $6\frac{1}{3}$ min. in one or the other direction on one of the three tracks. As a matter of fact, these trains are bunched so as to require that they run on the same track with the headways from two to six min. during the rush hours at morning and evening. For an average length block (1,930 ft.), from

